

# AIR TOXICS MONITORING NEWSLETTER

A PUBLICATION OF THE STAPPA/ALAPCO/SAMWG AIR TOXICS MONITORING WORK GROUP

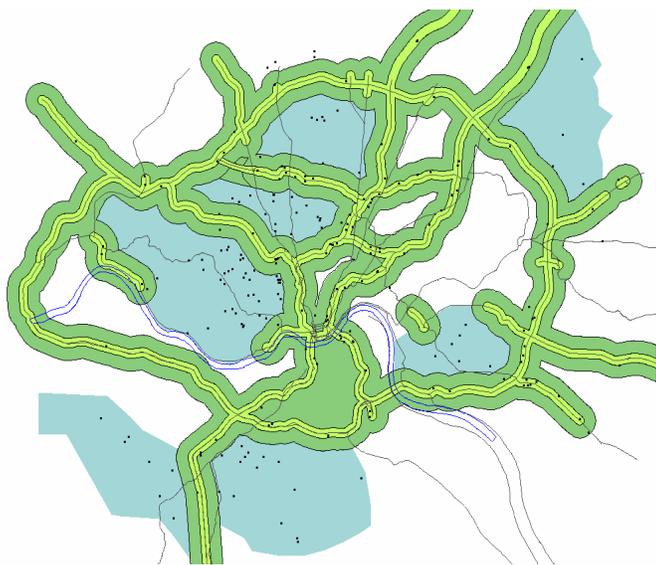
July 2003

The STAPPA/ALAPCO – USEPA/SAMWG Air Toxics Monitoring Work Group was established in 1999 for the purpose of developing recommendations for a national air toxics monitoring network. Members include representatives from several states and local agencies (Vermont, New Jersey, Texas, Oregon, California, Puget Sound), multi-state organizations (LADCO), and USEPA (OAQPS and some Regional Offices). The Work Group decided in early 2000 that the national air toxics monitoring network should be “rolled-out” over a several year period. Recent activities related to the national network are discussed in this quarterly newsletter.

## Community-Scale Monitoring

As part of the FY03 funding from USEPA, \$300K was allocated for a “community urban study” of air toxics concentrations in the Cincinnati-Dayton area. This area was selected to take advantage of existing studies and on-going air toxics monitoring programs.

In Cincinnati, the University of Cincinnati, in cooperation with the Hamilton County Department of Environmental Services (DOES), is conducting the Cincinnati Childhood Allergy and Air Pollution Study (CCAPS). An important part of CCAPS is to characterize the contribution of diesel particulate to ambient PM<sub>2.5</sub> levels. Monitoring includes daily (24-hour) and continuous sampling for PM<sub>2.5</sub> mass and species concentrations at numerous sites throughout the Cincinnati area (see figure below). In addition, VOCs will be sampled at three sites in the area.



**Ambient Monitoring Locations for CCAPS in the Cincinnati Area**

Hamilton County DOES will receive \$206,000 to collect air toxics measurements at three locations at varying distances from a major interstate highway (at 50-100 m, 200 m, and 400-600 m). The objective of this monitoring is to provide information about particle size distribution and elemental composition, as well as the VOC profile, in close proximity to roadways. Particle data will be obtained using 8-stage DRUM samplers, developed by the DELTA Group at the University of California - Davis, which provide size-selective, speciated PM<sub>2.5</sub> data for short (6-hour) time periods. Additional measurements at these sites include: VOC canister sampling, Harvard PM<sub>2.5</sub> Impactors, a meteorological station (one site), and an aethalometer (one site). Sampling will run for a two-week period during each season and will supplement the existing three VOC sites and two PM<sub>2.5</sub> speciation sites operated by Hamilton County.

In Dayton, the Regional Air Pollution Control Agency (RAPCA) has been engaged in a NATA refinement study, which includes canister sampling for VOCs (24-hour sample on a 1-in-6 day schedule) at two sites. To supplement this monitoring and provide information about the spatial pattern of VOCs throughout the Dayton area, RAPCA will receive \$91,000 to collect data for select VOCs (benzene, methylene chloride, perchloroethylene, and trichloroethylene) using passive sorbent tubes (30-day sample) at eight sites.

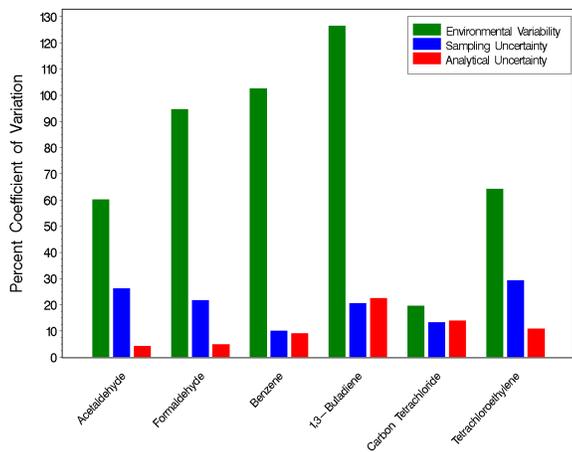
## Analysis of Pilot City Data

On May 13-14, a workshop was held to review the results of the pilot city data analysis. Highlights from the workshop included:

- A CD was distributed with the following material: pilot city air quality database and data dictionary, meteorological database and data dictionary, and various summaries (e.g., tables, figures, and maps). The pilot city database contains complete information for nine of the 10 pilot cities (i.e., there are no data from the West Virginia site).
- Examination of inter- and intra-lab variability found differences between the two laboratories studied (i.e., Michigan and ERG) and some variation over time within a given laboratory.
- Examination of various approaches for dealing with data below the reported method detection limits (MDLs) found that the measurement uncertainty is greater for lower concentration

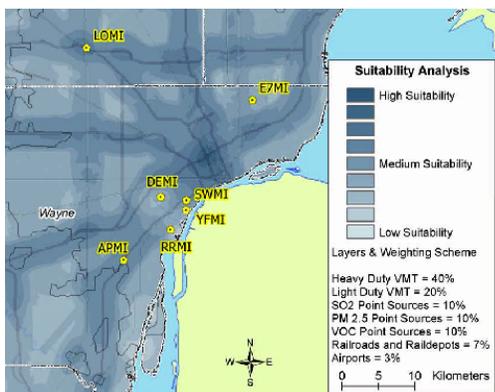
values. For data analysis purposes, it is recommended that all data, including data below MDLs, be reported whenever possible.

- A review of data variability found that most variation is due to environmental variability; in particular, temporal variability.



**Sources of Data Variation**

- An examination of trace metal composition by particle size found that PM10 and TSP concentrations were strongly related; however, the relationship differs between metals. (A similar analysis of the relationship between PM2.5 and TSP was not conducted due to the lack of sufficient data.) It should also be noted that of the seven metals examined, all exhibited statistically significant blank contamination.
- An initial source apportionment analysis using data from Detroit indicated a likely diesel component, based on several key species (i.e., manganese, semi-volatile organics, and EC:OC ratios) and activity patterns. GIS tools were also applied in Detroit to identify candidate monitoring sites for diesel impacts.



**Map of "Suitable" Monitoring Sites for Diesel Impacts**

- Presentations were made by representatives from the four major urban area pilot cities (Providence, Tampa, Detroit, and Seattle) on how they have used their data, such as general characterization studies and risk assessments.
- A web site with the air toxics data from the pilot city program and the historical archive is under development by USEPA. The web site is intended to support analyses of the air toxics data and is expected to be similar to the VIEWS data system (<http://vista.cira.colostate.edu/views/>).
- Several key network design recommendations were noted:
  - A nationally-consistent monitoring network is needed with common sampling and analysis procedures, a common set of compounds, and common quality assurance and data reporting. The network should address the following monitoring objectives: assess trends; characterize community-scale concentrations; and support air quality modeling).
  - To address the first monitoring objective, the initial 22-site network (known as the National Air Toxics Trends Sites or NATTS) is being established. The NATTS will operate with consistent sampling protocols and will provide data for several air toxics compounds, including benzene, formaldehyde, chromium, and (hopefully, in the future) acrolein, as well as black carbon as an indicator of diesel particulate. To provide additional information, consideration should be given to supplement the NATTS, such as additional measurements to assess diesel particulate and co-located meteorology.
  - To address the other monitoring objectives, more community-scale monitoring is needed. This monitoring is expected to be similar to that conducted in the four large pilot cities (i.e., 5 – 8 monitoring sites per city with a cost of at least \$500K per city).
  - Other technical issues of note include:
    - Sufficient resources should be provided for quality assurance (e.g., 15% of monitoring budget) and data management/analysis (e.g., 10% of monitoring budget)
    - More effort should be made to promote consistency in lab methods/analyses

- Further work is needed to develop continuous, less labor intensive measurement methods for several compounds
- Sampling for metals should address filter contamination problems
- Although a 1-in-6 day sampling schedule is adequate to characterize annual concentrations, more frequent sampling is needed for compounds which exhibit strong seasonality, such as benzene and formaldehyde
- Monitor siting to collect trends and community-scale concentrations should favor residential (neighborhood scale) locations

Copies of the presentations are available on the LADCO web site ([http://64.27.125.175/reports/ladco/Air\\_Toxics\\_May\\_2003/Airtox\\_may03.htm](http://64.27.125.175/reports/ladco/Air_Toxics_May_2003/Airtox_may03.htm)). Also, the draft data analysis report has just been released and is available on this web site (<http://64.27.125.175/toxics.html>).

Comments on the draft report are requested by September 1, 2003. Comments can be provided via the following link:

<http://www.sdas.battelle.org/ladco/postcomment.asp>

In response to the comments, a final report will be prepared and issued by the end of September.

### Allocation of FY04 Funds

For FY04, it is expected that there will be \$10M available to support national air toxics monitoring activities. (In addition, USEPA will also likely continue to reprogram \$6.5M in section 105 money from implementation of air quality standards to air toxics monitoring.)

USEPA is planning to issue grant guidance later this summer. The current thinking on how to allocate the \$10M is as follows:

\$3.5M for continuation (and enhancement) of the 22-site national air toxics trends sites (NATTS), including additional quality assurance

\$0.5M for data analysis projects

\$6M for "community-scale" monitoring projects

The community-scale projects represent the next step (beyond NATTS) for the national air toxics monitoring network. The objective of this additional monitoring is to characterize ambient concentrations in representative areas (i.e., provide an understanding of the magnitude, spatial pattern, and

temporal profile of air toxics concentrations in communities throughout the country). This monitoring will build-upon the initial study in the Cincinnati-Dayton area discussed above. It will also enhance an area's ability to assess the controls put in place through implementation of various mobile source and MACT rules.

### Monitoring Methods Workshop

Please mark you calendar for October 7-9 2003 for a workshop to discuss monitoring methods for air toxics compounds. The workshop will be held at the USEPA Office of Radiation and Indoor Air Laboratory in Las Vegas, Nevada. The purposes of the workshop are to provide state and local agency monitoring personnel with an opportunity to share their experiences with air toxics monitoring and to develop recommendations on effective, practical air toxics monitoring methods. The workshop agenda is currently under development. If you have any suggestions or comments about the workshop, then please contact Dr. George Allen, NESCAUM ([gallen@nescalum.org](mailto:gallen@nescalum.org)). Details about the workshop will be available on the NESCAUM website ([www.nescalum.org](http://www.nescalum.org)) in the near future. A formal workshop announcement will also be issued soon.

For information on national air toxics monitoring, please contact Sharon Nizich, USEPA, OAQPS, [nizich.sharon@epa.gov](mailto:nizich.sharon@epa.gov), 919-541-2825. For information on the data analysis projects, please contact Michael Koerber, LADCO, [koerber@ladco.org](mailto:koerber@ladco.org), 847-296-2181. This newsletter is issued on a regular (quarterly) basis to provide status reports on air toxics monitoring activities.